REMARKS

Claims 1 and 4 were editorially revised.

New claims 7 and 8 are supported on page 18, second paragraph of the specification.

New claims 9 and 10 are supported by the last two paragraphs on page 10 of the specification.

New claim 11 is supported by the second paragraph on page 11 of the specification.

New claim 12 is supported by the last full paragraph on page 11 of the specification.

New claim 13 is supported by the second full paragraph on page 13 of the specification.

New claims 14 and 15 are supported by the last full paragraph on page 18 of the specification.

New claims 16 and 18 are supported by the second paragraph on page 4 of the specification and by Examples.

New claim 17 is supported by the third paragraph on page 10 of the specification and by Examples.

New claim 19 is supported by the second full paragraph on page 12 of the specification.

New claim 20 includes features of claims 1, 3, 4, 9, 16 and 17 and, wherein the cured resins in each of the layers (A), (B) and (C) is an acrylic resin (see page 7, lines 9 et seq. of the specification). New claim 20 also contains features that are supported in the specification on page 12, lines 9 to 13; the paragraph bridging pages 13 and 14 and the Examples.

Claims 1 and 4 to 6 were rejected under 35 USC 103 as being unpatentable over Matsufuji et al. (USP 6,480,250) in view of Sopko (USP 6,436,541) for the reasons set forth on pages 2 to 4 of the Office Action.

The film for optical applications of the present invention is a film for preventing reflection of light which is prepared in accordance with a wet process and has a structure comprising (A) a hard coat layer, (B) high refractivity layer I, (C) high refractivity layer II, (D) a low refractivity layer and, optionally (E) an antifouling layer disposed on layer (D), which are successively laminated on at least one face of a substrate film (see page 4, first paragraph of the specification). Each of the high refractivity layers I and II comprises a resin cured by an ionizing radiation and a metal oxide. The resins cured by an ionizing radiation in these layers, together with the hard coat

layer are effective for improving scratch resistance. The metal oxides used in high refractivity layers I and II are used for adjusting the refractive indices of the layers. Furthermore, the metal oxide used in high refractivity layer II is a refractive index in a range of 1.60 to 1.70 and exhibits a good adhesion with the low refractivity layer (C). It is one of the very important features of the presently claimed invention that a layer which works as a high refractivity layer and exhibits excellent adhesion with the low refractivity layer (D) comprising a siloxane-based polymer is integrally formed from layer (B) and layer (C), since high refractivity layer I and high refractivity layer II are laminated on the hard coat layer (A) (see page 12, line 14 bridging to page 13, line 9 of the specification).

It was admitted in the Office Action that Matsufuji et al. lack references to multiple high refractory layers and the refractive index of the high refractory layers.

Matsufuji et al. disclose a low-reflection transparent conductive multi layer film to be attached to the front panel of the cathode-ray tubes or plasma displays comprising, in the order described, a transparent substrate, a hard coat layer, a

transparent conductive layer containing particles comprising at least one of a metal and a metal oxide, and at least one transparent protective layer which has anti-smudge properties, has a refractive index different from that of the transparent conductive layer and comprises a resin having a high dielectric power factor (see the ABSTRACT of Matsufuji et al.). The Matsufuji et al. reference is different from the present invention in the following points.

(1) The transparent conductive layer 3 in Matsufuji et al. does not contain any of the binder resins recited in the applicants' claims, to say nothing of a resin cured by an ionizing radiation which is one of the very important features of the presently claimed invention. The cured resin is important to improve the scratch resistance of the film. Matsufuji et al. describe that "To secure high conductivity, it is preferred for the transparent conductive layer to consist substantially solely of conducive particles, *not containing non-conductive materials such as binder resin*."

(2) In spite of the indication at the bottom of page 2 of the Office Action that "Matsufuji further teaches the inclusion

of a *high refractivity layer (3)*, Matsufuji et al. fail to teach or suggest that layer 3 is a "high refractivity layer". Similarly, Matsufuji et al. do not teach a "low refractivity layer". Matsufuji et al. describe only that layer 3 is "a *transparent conductive layer 3* containing conductive particles" (column 3, lines 8-9 of Matsufuji et al.). Matsufuji et al. disclose some examples of the conductive metal oxide particles as follows: indium oxide, tin oxide, antimony oxide, zinc oxide, aluminum oxide, silicon oxide, iron oxide. Applicants have informed the undersigned that according to a search by the applicants, the refractive indices of these metal oxides were found to be as follows (shown in the parentheses next to the name of the oxides): indium oxide (2.0), tin oxide (2.0), antimony oxide (2.0), zinc oxide (2.0), aluminum oxide (1.63). silicon oxide (1.46) and iron oxide (2.5-2.7) (see the enclosed copy of Cheng-Chung Lee, pages 443 to 446, Kogakuhakumaku to Seimakugijutsu, (Optical Thin Film and the Method of Forming the Film), printed in Japan, 2002, by Seikosya). The refractive index of silicon oxide (1.46) is in the range of the low refractivity layer (D) of the present invention. Matsufuji et al. describe only that the refractive index of layer 4 is *different*

from the refractive index of layer 3 (ABSTRACT; column 7, lines 36 to 45 of Matsufuji et al.). Matsufuji et al. are silent regarding the actual refractive index of layer 3. It is evident that Matsufuji et al. do not intend that layer 3 is a high refractivity layer.

Sopko et al. disclose a four-layer antireflective coating in columns 9-10 and Fig. 8. The antireflective coating is supported over the substrate 25 and includes a first layer 49 deposited over the substrate 25, a second layer 51 deposited over the first layer 49 thereover, in turn having a third layer 27 deposited over the second layer 51. The first layer 49 is a high index layer relative to the substrate and the second layer 51 is a low index layer relative to the first layer 49 (column 9, lines 46-55 of Sopko et al.). The refractive index of the second layer 51 is less than the refractive index of third layer 27 and is preferably less than about 1.7 and most preferably is less than about 1.5. The refractive index of the first layer 49 is greater than the refractive index of the second layer 51, is preferably higher than about 1.6 and most preferably is higher than about 1.8 (column 10, lines 3-81 and column 2, lines 58-65 of Sopko et al.). Although Sopko et al. do not disclose the actual value of the refractive index of the third layer 27 in columns 9-10, it is described that the third layer, which may correspond to the third

layer 27, has a refractive index of 1.7 to 2.2 in an embodiment of at least a 4-layer anti-reflection coating (column 2, lines 54-67 of Sopko et al.)

Sopko et al. do not disclose to include a hard coat layer between the surface of the substrate 25 and the first layer 49. If this difference is disregarded, it is concluded that the refractive index of the third layer 27 of Sopko et al., which may correspond to the low refractivity layer (D) in the present invention, is higher than the refractive index of the second layer 51, which may correspond to the high refractivity layer II of the present invention. From this standpoint, Sopko et al. lack an essential feature of the present invention. As summarized hereinabove, it is a very important feature of the present invention that the refractive indices of two high refractivity layers and the low refractivity layer are defined in a manner so as to be mutually connected to each other, thus attaining both a low reflection of light and good adhesion.

In column 12, lines 22-34, Sopko et al. disclose methods of deposition of the TCO layers, moderately absorbing layers or low index layers. However, Sopko et al. fail to disclose to deposit these layers in accordance with a wet process using a resin cured by an ionizing radiations as in the present invention.

With regard to inter-layer adhesion, Sopko et al. describe that the roughened zone 36 improves the bonding between the two layers 27 and 29 (column 7, line 42 of Sopko et al.). However, Sopko et al. fail to disclose to attain a good interlayer adhesion between 51 and 27, which may correspond to applicants' high refractivity layer II and applicants' low refractivity layer D, respectively, by selecting the metal oxide used in layer 51 corresponding to the layer II of the present invention and maintaining the refractive index of the layer in a preferable range.

In summary, Both Matsufuji et al. and Sopko et al. do not teach or suggest to use a resin cured by an ionizing radiation. Matsufuji et al. do not teach or suggest the refractive index of the transparent layer for the specific relations between the values of refractive indices of the transparent layer and the transparent protective layer. Sopko et al. teach multiple high refractivity layers. However, Sopko et al. teach that the refractive index of the third layer must be greater than the refractive index of the second layer in the four-layer antireflective coatings. Based on the arguments set forth above, it is respectfully submitted that any one of ordinary skill in the art would not be led to the presently claimed invention by

combining Matsufuji et al. with Sopko et al.

With regard to the rejections for claims 4 to 6 described on page 3, line 14 bridging to page 4, line 5 of the Office Action, the applicants respectfully submit that these claims should be allowable because these claims are dependent on claim 1 and it is respectfully submitted that claim 1 has been shown to be allowable by the above remarks. However, the applicants wish to add the following comments which individually concern the reasons for the rejection of claims 4 to 6 indicated in the Office Action.

Regarding claim 4, the position was taken in the Office Action that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have a high refractivity layer of antimony doped tin oxide as taught by Sopko et al. in Matsufuji et al. for the purpose of providing better antistatic qualities in the Matsufuji et al. film stack. As discussed above, Matsufuji et al. do not describe a high refractivity layer, therefore, it is not certain what layer was intended in the Office Action to mean by "high refractivity layer". If layer 3 was intended to be the "high refractivity layer," which would be presumed by the description at the bottom

of page 2 of the Office Action, such indication would not be correct, because the use of antimony doped tin oxide is in the high refractivity layer II in applicants' claim 4, not in the high refractivity layer I corresponding to layer 3 of Matsufuji et al. Similarly, Sopko et al. do not teach the use of antimony doped tin oxide in layer 51, which may correspond to the high refractivity layer II in applicants' claim 4. The use of antimony doped tin oxide in the high refractivity layer II is important in the presently claimed invention to obtain an excellent property for preventing reflection of light and also to attain an excellent adhesion between the high refractivity layer II and layer (D) (see page 12, line 14 bridging to page 13, line 9 of the present specification).

Regarding claim 5, it was indicated in the Office Action that Matsufuji et al. teach the low refractivity layer having antistatic properties (see the bottom of page 3 of the Office Action). Although Matsufuji et al. describe that the multi layer film is antistatic because it has a transparent conductive layer containing conductive metal or metal oxide particles (column 3, lines 16-18 of Matsufuji et al.), Matsufuji et al. do not describe that a "low refractivity" layer itself having antistatic

properties. As previously discussed, Matsufuji et al. do not describe a "low refractivity layer", and further, the fact that the multi layer film is antistatic because it has a transparent conductive layer containing conductive metal or metal oxide particles and the fact that the low refractivity layer itself, if present, included in the antistatic multilayer film is antistatic are different concepts. Matsufuji et al. do not teach any of the layers other than the transparent conductive layer is antistatic.

Claims 2 and 3 were rejected under 35 USC 103 as being unpatentable over Matsufuji et al. in view of Sopko et al. as applied in claim 1 above, and further in view of Okamura (USP 6,104,530).

It was admitted in the Office Action that Matsufuji et al. in combination with Sopko et al. do not teach a hard coat having antiglare properties.

The applicants respectfully submit that claims 2 and 3 should be allowable because these claims are dependent on claim 1 and claim 1 has been shown above to be allowable hereinabove. However, the applicants wish to add the following additional comments to respond to the reasons for the rejection of claims 2 to 3 as set forth in the Office Action.

Okamura et al. disclose transparent laminates which have high transparency and, moreover, excellent electromagnetic shielding characteristics and near-infrared cutting-off characteristics. Okamura et al. disclose optical filters for displays using these transparent laminates. Such optical filters are formed by laminating a transparent electrically conductive layer composed of high-refractive-index transparent film layers (B) and metal film layers (C) consisting of a silver-containing alloy on one major surface of a transparent substrate (A) in such a way that a repeating unit comprising a combination of one high-refractive-index transparent film layer (B) and one metal film layer (C) is laminated three times or more, and further laminating one high-refractive-index transparent film, layer (B) thereon. The preferred embodiment of Okamura et al. is illustrated in Fig. 2 therein.

With regard to claim 2, Okamura et al. teach that the surfaces thereof (in particular, the surface opposite to the display) may be provided with a hard coat layer having antiglare properties. It is evident that "the surfaces" here means the surface opposite to the display or the surface at the side of the

display (i.e., the surface of the substrate 11 opposite to the surface on which the transparent electrically conductive layer 12 is disposed) and by no means to be between the substrate 11 and the transparent conductive layer 12. In contrast to Okamura et al., the hard coat layer in the present invention is disposed between the substrate (A) and the high refractivity layer I.

Furthermore, Okamura et al. fail to teach the use of a resin cured by an ionizing radiation in the layers of the high-refractive-index transparent film layers (B) and the metal film layers (C). It is a very important feature of the present invention that the scratch resistance of the film is improved as a total effect of layers (A), (B) and (C), each of the layers containing a resin cured by an ionizing radiation.

With regard to claim 3, Okamura et al. fail to teach or suggest the use of resin cured by an ionizing radiation to form the layer of indium oxide doped with tin. Matsufuji et al., as well as Sopko et al., do not teach the use of a resin cured by an ionizing radiation in the layers corresponding to the high refractivity layer I of the present invention.

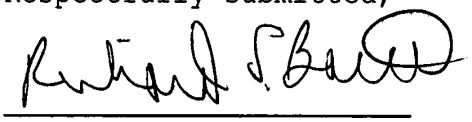
It is therefore respectfully submitted that the combination of Matsufuji et al. with Sopko et al. and Okamura et al. do not render obvious the presently claimed subject matter.

It is further respectfully submitted that the applicants' claimed invention is not rendered obvious over the references, either taken singly or combined in the manner relied upon in the Office Action in view of the many distinctions discussed hereinabove. It is moreover submitted that there are no teachings in the references to combine them in such a manner relied upon in the Office Action.

Reconsideration is requested. Allowance is solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,



Richard S. Barth
Reg. No. 28,180

Frishauf, Holtz, Goodman & Chick, P.C.
767 Third Ave., 25th Floor
New York, NY 10017-2023
Tel. No. (212) 319-4900
Fax No.: (212) 319-5101
RSB/bg/ddf
Enc.: Copies of pages 443 to 446 of Cheng-Chung Lee, Kogakuhakumaku to Seimakugijutsu, (Optical Thin Film and the Method of Forming the Film), 2002.